



INTER OFFICE COMMUNICATION

TO: Bill Skowronski, Section Chief, DLPC

DATE: June 23, 1983

FROM: Mark Schmidt, DLPC, NEDO (MS)

SUBJECT: Union Carbide Proposed Solid Waste Disposal Facility

EPA Region 5 Records Ctr.



339751

I. LOCATION

The proposed Union Carbide sludge disposal facility is located approximately 41° 54' 00" N. Lat., 85° 45' 20" W. Long., Ashtabula Township, Ashtabula County. The site can be located on the USGS Ashtabula North (2 NE) 7.5 minute quadrangle.

II. SOILS/BEDROCK

Soil borings at the site indicate a dark topsoil covers the site to depths ranging from .5 ft. to 3.5 ft. Other references indicate that these soils belong to the Conneaut Silt Loam Series which is typified by low permeabilities and high water table conditions. Glacial till and lacustrine silty clays comprise the majority of the remaining soils. One near surface loose sand seam does appear in boring #211 (207) and is wet (saturated). The boring logs indicate all other soils are "moist" (contain water but not saturated).

Bedrock is encountered at approximately 50 ft. below the surface and is typified by shale units of the Devonian Age Chagrin Formation.

Permeability info on these soils indicates a range of "K" values from 10^{-5} cm/sec. (till) to 10^{-8} cm/sec. (clay) which is considered low to very low permeability. Neither lab or field permeability tests were performed on the loose sand seam in B-211 (207).

III. SURFACE DRAINAGE/HYDROGEOLOGY

The site is located approximately 1.0 miles from Lake Erie and 0.5 miles from Fields Brook. Drainage at the site is primarily to drainage ditches to the East, North, and West which flow North. Drainage to the South would be to Fields Brook.

Ground water is sparse in this area (the report indicates no water wells have been developed within 2,000 ft. to 1 mile of the site), which could be expected from these types of subsurface materials (low transmissibility). However, water levels in all monitor wells were observed to be within 5 ft. of the surface 2 days after installation. Pumping data/drawdown info were not submitted on these wells.

Although the report did not give ground water flow directions, it appears to be flowing North/Northwest at the site.

Ground water quality data from these wells indicates poor ground water conditions. SO_4 and COD are the notable parameters with high concentrations. Fe, Mn, and TDS are also high in concentration and far exceed the Secondary Drinking Water Standards. Cd was the only primary drinking water parameter analysed and was of low concentration.

IV. DISCUSSION

Well #211 (207) appears to be downgradient at the site and has the highest concentrations of COD (73 mg/l), TOC (41 mg/l), and NH_4 (1.2 mg/l) of the 4 wells. This well also has the 2 ft. thick loose sand seam within 3 ft. of the surface and a water table of 2 ft. The lateral extent of this sand zone was not discussed in the submittal.

The high levels of metals (Fe, Mn) and other parameters in all wells at this site indicates that the low permeability substrate is not an effective barrier to ground water degradation in the area. The submittal did not discuss the ground water quality data (except how it was obtained).

All 4 borings indicate water table levels \leq 3.5 ft. and 2 wells have water table levels near 2 ft. Initial excavation for waste cells will bring wastes within 0 ft. to 1 ft. of ground water levels in some areas of the site. Waivers seem necessary considering these conditions but were not requested in the submittal.

Pursuant to the geologic review of the Union Carbide plans and the inspection of the proposed site on May 9, 1983, several areas of concern have become apparent. They are:

- 1) The ground water flow (i.e., direction, rate) needs to be more thoroughly addressed. Also, is there any interaction of ground water with the drainage channels? Additionally, does the flow involve the ELKEM impoundments to the north of the site?
- 2) The submittal needs to explain the questionable water quality results submitted for the four ground water monitor wells. Why the high COD, TOC, SO_4 , etc. levels?
- 3) What is the lateral extent of the near surface saturated sand found in monitor well 211 (207)?

MS:km